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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/600,659

06/23/2003

Tetsuzo Ueda

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6152

7590

12/09/2004

Jack Q. Lever, Jr.
McDERMOTT, WILL & EMERY
600 Thirteenth Street, N.W.
Washington, DC 20005-3096

EXAMINER

MAI, ANH D

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 12/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/600,659

Applicant(s)

UEDA ET AL.

Examiner

Anh D. Mai

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 1-14, 22-25 and 30-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-21 and 26-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/23/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's election without traverse of claims 17-21 in the reply filed on November 19, 2004 is acknowledged. Claims 15, 16 and 26-29 are generic.
2. Claims 1-14, 22-25 and 30-33 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on November 19, 2004.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

METHOD FOR FABRICATING A SEMICONDUCTOR LIGHT-EMITTING DEVICE
(LED) BY IRRADIATING LIGHT THROUGH A SUBSTRATE TO SEPARATE THE
SEMICONDUCTOR MULTILAYER FILM FROM THE SUBSTRATE.

Claim Objections

5. Claims 28 and 29 are objected to because of the following informalities:
Claim 28, line 1, recites: wherein the first or second supporting member is a..

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However, claim 26, which claims 28 and 29 depend on, does not include a second supporting member.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 27 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 27, step h), recites: bonding a second supporting member in film form having different properties from those of the first supporting member onto the surface of the semiconductor multilayer film opposite to the first supporting member, before the step g) is performed.

However, before step g), the surface of the semiconductor multilayer film opposite to the first supporting film are still being covered by the substrate of a single crystal.

It not known when step h) is performed.

Since claim 27 is indefinite, a meaningful examination of claim 27 is impossible.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizaki et al. (U.S. Pub No. 2004/0051109) in view of Applicant Admitted Prior Art. (hereinafter APA).

With respect to claim 15, Ishizaki teaches method for fabricating a semiconductor light-emitting device substantially as claimed including the steps of:

- a) forming, on a substrate (10) of a single crystal, a semiconductor multilayer film (2/3/4) including at least two semiconductor layers (2/4) having mutually different conductivity types (p-n);
- b) separating the substrate (10) from the semiconductor multilayer film (2/3/4);
- c) forming a first electrode (22) on a surface of the semiconductor multilayer film (2/3/4) and forming a second electrode (23/25) on the opposite surface of the semiconductor multilayer film (2/3/4). (See Figs. 10-13).

Thus, Ishizaki is shown to teach all the features of the claim with the exception of explicitly disclosing the formation of the metal film (bonding pad) over one of the first and second electrodes.

However, APA teaches that it is well known in the art to form a metal film (bonding 108) over the first electrode (107) to provide contact pad for the external contact line. (See Fig. 18).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form a metal film over one of the first (22) and second (23/25) electrodes of Ishizaki as taught by APA to provide contact pad for the external contact line.

With respect to claim 16, the semiconductor multilayer film (2/3/4) of Ishizaki is made of a Group III-V compound semiconductor containing nitrogen as a Group V element.

With respect to claim 17, the separation of the substrate (10) and the multilayer film (2/3/4) in step b) of Ishizaki includes: irradiating light having a wavelength at which the light passes through the substrate and is absorbed in part of the semiconductor multilayer film is applied onto the surface of the substrate (10) opposite to the semiconductor multilayer film, so that a decomposition layer is formed inside the semiconductor multilayer film by decomposition of part of the semiconductor multilayer, thereby separating the substrate (10) from the semiconductor multilayer film (2/3/4). (See Fig. 10D).

8. Claims 18-21, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizaki '109 and APA as applied to claim 17 above, and further in view of Cheung et al. (U.S. Patent No. 6,071,795).

With respect to claim 18, Ishizaki teaches the step of separating the substrate (10) on the surface of the semiconductor multilayer film (2/3/4) including irradiating light as described in claim 17 above.

Thus, Ishizaki is shown to teach all the features of the claim with the exception of explicitly disclosing the irradiating laser light is pulsing laser light, although it is well known in the art that irradiating laser light is pulsating.

However, Cheung teaches separating a substrate (104) from a semiconductor layer (102) includes irradiating the substrate (104) side with pulsating laser light beam (116). (See Fig. 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to irradiating the substrate of Ishizaki utilizing pulse laser light beam as taught by Cheung to facilitate the separation.

With respect to claim 19, Cheung further teaches that it is not necessary to use a laser as the light source as long as the light intensity is sufficient to form the separation layer. UV light of sufficient intensity may be used in place of pulse laser light. (See col. 6, lines 7-11).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to separate the substrate of Ishizaki by irradiating a light source other than laser having sufficient intensity as taught by Cheung to form the separation layer.

Although not specifically disclosing mercury lamp, however, mercury lamp is well known in the art to emit UV radiation at 365 nm. Thus within the scope of UV as taught by Cheung.

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With respect to claim 20, the irradiating light of Cheung is applied such that the substrate is scanned within the surface thereof. (See col. 4, lines 54-65).

With respect to claim 21, the irradiating light of Cheung is applied, while heating the substrate. (See Summary of the Invention).

With respect to claim 26, in view of Cheung the method further includes the steps of:

f) bonding a first supporting member (110) in film form for supporting the semiconductor film (102) onto the semiconductor film (102), the first supporting member (110) being made of a material different from the material constituting the semiconductor multilayer film (102), between the steps of a) and b); and

g) peeling off the first supporting member (110) from the semiconductor film (102), after the step b) has been performed. (See Fig. 1, step 126).

With respect to claim 28, as best understood by the examiner, the first supporting member (110) of Cheung is a single-crystal substrate made of a semiconductor.

9. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizaki '109, APA and Cheung '795 as applied to claim 28 above, and further in view of Iwafuchi et al. (U.S. Pub. No. 2002/0115265).

As best understood by the examiner, Cheung teaches a method as described in claim 28 above including: at a bonding surface with the semiconductor film (102) there is an adhesive layer (108) that can be peeled off when heated. (See col. 5, line 45-52).

Thus, Ishizaki, APA and Cheung are shown to teach all the features of the claim with the exception of utilizing polymer as for the first supporting member.

However, Iwafuchi teaches: a varieties of material can be used for the first supporting member (14) including: semiconductor, metal and plastic substrate (hence polymer).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to utilize plastic for the first supporting member as taught by Iwafuchi because plastic has a desired stiffness for holding the semiconductor film.

Conclusion

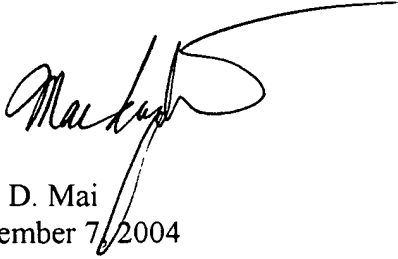
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh D. Mai whose telephone number is (571) 272-1710. The examiner can normally be reached on 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Anh D. Mai', with a long, sweeping horizontal line extending to the right.

Anh D. Mai
December 7, 2004